

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 March 2001 (15.03.2001)

PCT

(10) International Publication Number
WO 01/18655 A1

(51) International Patent Classification⁷: G06F 13/00

(21) International Application Number: PCT/US00/20814

(22) International Filing Date:
5 September 2000 (05.09.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/152,234 3 September 1999 (03.09.1999) US
60/207,760 30 May 2000 (30.05.2000) US

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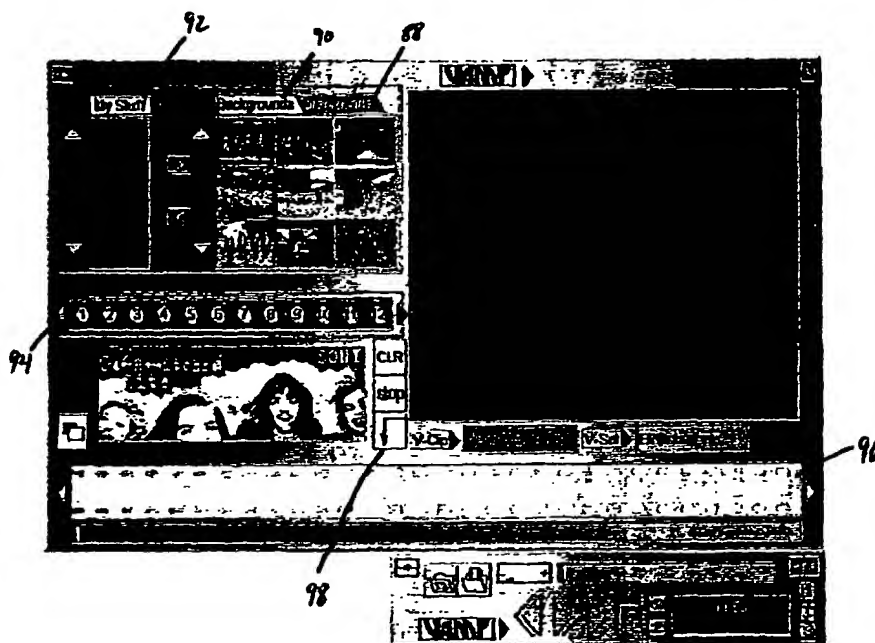
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(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,

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(54) Title: METHOD AND SYSTEM FOR MUSIC VIDEO GENERATION



(57) Abstract: A system for generating a music video on a computer, comprises an editing interface including a selection of foreground (88), background (90), import facility (92), and special effects buttons (94) and a timeline (96) for creating a script of instructions for the assembly of graphic images in synchrony with music to thereby produce a music video project.



IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *With international search report.*

METHOD AND SYSTEM FOR MUSIC VIDEO GENERATION

Field Of The Invention

The present invention is related to enhanced CD(CDX) and network-transportable platforms suitable for the generation of custom-designed music videos. More particularly, the invention is related to the generation of custom-designed music videos based on and synchronized for playback with audio compact discs or digital music locally on a personal computer or remotely by packaging into Internet transmittable audio/video formats. The applicant reserves all US and foreign rights in the copyrightable subject matter which is disclosed herein.

Background of the Invention

It can be argued that the great boon wrought upon mankind by the advent of the Internet and World Wide Web is the tremendous potential for interconnectivity which the Internet facilitates. An avenue for providing exchange of ideas and creativity such as the Internet provides has never been so available to so many people. New ways are therefore constantly being sought to bring the full brunt of human creativity and expression to bear on the Internet for sharing with the rest of society.

While many areas of artistic expression have found outlets on the Internet, one area that has not been as facilitated is the combination of music and graphics, an area having particular appeal for teenagers. In particular, the media of television has nurtured very successfully the genre of music videos and this has contributed to a generation of youth that is fairly passive in their multimedia-related activities. "Couch-potato" syndrome is recognized as one of the negative impacts that our media-driven society is fostering. There is thus a well-recognized need for the development of new more interactive activities targeted at our youth.

Recorded music is now distributed primarily in digital form, either on compact discs (hereinafter "CDs"), digital audiotapes ("DATs") and other forms of electronic media, as well as in compressed files over the Internet.

One form of audio CD, called CDX or enhanced CD, is designed having a total of 640 MB of data space, of which roughly 85% to about 95% is allocated for the track containing audio data and the remaining 5% to about 15% is available for a track comprising "other" digital information. The percentages of space allocated to each track hereinabove are approximate and merely meant to give a rough guide. The actual allocation could, if so desired, vary greatly from these ranges. It has been known to use the non-audio track at the end of an enhanced CD for storing graphic image files, which could be viewed by the audio CD end-user. The CDX is inserted into a CD reader or CD drive of a personal computer. While the audio tracks of the CDX are being listened to, the viewer can view graphics on the computer screen and click on various items using known pointing devices, such as mouse or electronic pen, to activate the data programming provided on the enhanced CD. Usually, the recording company will thereby provide additional information about the musical artist including, for example, biographical data, data regarding other recordings available and other promotional data. It has also been known to provide pictures of the artist, which the end user can print or incorporate into other computer programs. Thus end users are permitted to be less passive in their listening enjoyment and be engaged in a somewhat interactive manner. However, the synchronization of the viewing of the graphics while listening to the audio tracks of the CD product have not been well developed and the level of interactivity provided by the known enhanced CD technology is extremely low.

Up until today, enhanced CD's were very simple "click-and-play" products developed using common software multimedia authoring tools. These products have no built-in capability to allow the user to interact with or create using the audio from the CD together with graphic resources. Certainly, they have never heretofore permitted or envisioned giving the user the ability to assemble graphics into a video clip and to synchronize it with the music on the CD. Nor has it heretofore been

contemplated to provide a system which records the music video as a small, editable script.

Objects and Summary of the Invention

Thus it is one object of the present invention to provide a CDX which affords the user greater freedom of interactivity with the graphics and music.

It is another object of the present invention to provide an easy-to-use tool for creating personalized music videos which are compact enough to be easily swapped with those of other users.

It is still another object of the present invention to provide an easy-to-use tool for creating personalized music videos which is sufficiently compact to fit in the data track of a CDX.

It is yet another object of the present invention to provide an easy-to-use tool for creating personalized music videos in which the graphics actually track the music.

It is yet a further object of the present invention to provide an easy-to-use tool for creating personalized music videos which can then be easily edited or adapted in another and/or by another user.

It is still a further object of the present invention to provide a music video generating and editing tool which is sufficiently compact to facilitate downloading the tool itself from a wide area network to a client computer in a short period of time.

Recognizing these objects, and others not specifically mentioned hereinabove, the present invention provides a way to tap into the teenagers' natural interest in music videos such as those produced for television network broadcast and use that interest to entice teens to interact and be creative rather than simply passively receive. By taking advantage of the poorly used data space on enhanced CDs, the invention calls for providing on a CDX or via the Internet a software

package which allows the end-user, for example, a teenager, to design video imagery which he can overlay onto and synchronize with the music provided by the recording manufacturer. The graphic resources used for generating the video imagery might derive from the "official version" sanctioned by the artist or recording company, or optionally the end-user can design original graphics from scratch, use drawing tools and special effects tools incorporated into the software or he may import graphic resources from other sources and in other formats.

Furthermore, the programming and methods of the present invention not only allow the end-user to generate video footage (the project) which is synchronized to the playing of the audio, they also facilitate the distribution or transmission of the entire project to other end-users for them to play or further manipulate and edit as they desire, including via any means of remote computer communication such as the Internet or local area networks (LANs) for example.

The present invention includes the necessary computer programming which permits the packaging of the various design tools to be incorporated into the extremely limited space reserved for data which is available at the end of an enhanced CD.

A further aspect of the present invention lies in the opportunities for enhanced marketing which are thus afforded to the recording manufacturers. For example, due to size constraints, recording companies previously could only incorporate a few simple graphics into the data portion of the enhanced CD. Utilizing the present invention, the recording manufacturer can now provide to each end user the inventive program together with "official" graphics resources with which the end-user can design a video performance of the music artist. This added interactivity further stimulates the end-user's enthusiasm in the artist and entices the end-user to share his interest in the artist with other end-users, typically teens, by swapping their individually created videos directly or posting them in a public forum. The software of the invention also provides a mechanism to [a] dedicate a custom music video to a loved one by inserting various textual messages into the videos in such formats as infobubbles or tickers which can run across the window; [b] easily utilize the upload

function button to post the project to a private Web page or to a central Website, such as one sponsored by the artists or their record company for viewing by the general public; and [c] to automate the sending of e-mail invitations to the author's friends and, in particular, to the dedicatee, to view the premiere of the new dedicated music video by following the provided World Wide Web hyperlink.

The recording companies could also promote the artists further by conducting Internet-based competitions for the most creative end-user designed music videos. Additionally, after an end-user has been registered as a purchaser, the recording manufacturer can e-mail updates of optionally self-installing promotional materials to the end-user.

The interactive software of the present invention, as currently adapted to perform in the Windows 95, 98/2000 and Windows NT operating system environments, comprises two basic modules including an open-ended video clip generating and distributing tool and a graphic resources library. These are relatively low in capacity, with the files comprising the generating tool module having a combined size of as little as approximately 4 MB or less when compressed. The graphic resources library thus can easily be as large as about 50 -120 MB after compression and still fit comfortably in the data track of the CDX.

The software invites users to interact with the audio track and explore and create using the artist's exciting visuals - videos, animations, images and dynamic graphic effects combined with real time manipulation in an extremely user-friendly environment. All this is done in complete synchronization with the audio portion directly from the CDX (or any other audio source). Users may even import their own resources from their PC and create their very own clips to play with their favorite songs. Thus, the present invention also allows for real-time creativity.

Another aspect of the system of the present invention, as a result of its being open-ended, is its capacity to link the end user to the Internet in order to form and make use of an on-line community. The present invention satisfies the need for fostering an on-line, interactive community, that not only receives but also creates

and develops. Users may also link onto the Internet from the application in order to "upload" their work for viewing and/or modification by others as well as being able to download new features (for example, graphic effects, VJ modes etc.) for incorporation into the application.

Brief Description Of The Drawings

The following detailed description of the drawings will be more clearly understood by reference to the drawings in which:

FIG. 1a is a graphic representation of one exemplary embodiment of an initialization setup window for initializing a music video generating or playing session in accordance with one exemplary embodiment of the present invention;

FIG. 1b is a graphic representation of the initialization setup window shown in FIG. 1a showing various components thereof in an expanded or operable state;

FIG. 2a is a graphic representation of a music video player control panel in accordance with one exemplary embodiment of the present invention;

FIG. 2b is a graphic representation of the expanded panel of the music video player control panel in accordance with exemplary embodiment of the present invention depicted in FIG. 2a;

FIG. 3 is a graphic representation of an exemplary embodiment of the video clip generation panel, which may be used in accordance with the present invention;

FIG. 4 is a graphic representation of the exemplary embodiment of video clip generation panel shown in FIG. 3, having a foreground image displayed in the viewing window in accordance with one exemplary embodiment of the present invention;

FIG. 5 is a graphic representation of the exemplary embodiment of the video clip generation panel shown in FIG. 4 showing a selected background displayed in the

viewing window behind the foreground image in accordance with one exemplary embodiment of the present invention;

FIG. 6a is a graphic representation of the exemplary embodiment of the video clip generation panel shown in FIGS. 4 and 5 showing the background selected in FIG. 5 being transformed by use of a special effects panel in accordance with one exemplary embodiment of the present invention;

FIG. 6b is a graphic representation of the exemplary embodiment of the video clip generation panel shown in FIGS. 4, 5 and 6, showing the selected background being redisplayed in the primary display window, and after having been altered by the user's application, thereon, of a special effect, in accordance with one exemplary embodiment of the present invention;

FIG. 7 is a graphic representation of the exemplary embodiment of the video clip generation panel shown in FIG. 6b, showing a thumbnail shadow frame being dropped onto the video timeline in accordance with one exemplary embodiment of the present invention;

FIG. 8 is a graphic representation of the exemplary embodiment of the video clip generation panel shown in FIG. 7, wherein the thumbnail shadow frame has been fully positioned on the timeline and converted into a final image thumbnail in accordance with one exemplary embodiment of the present invention;

FIG. 9 is a graphic representation of the exemplary embodiment of the video clip generation panel shown in FIG. 8 showing a series of frames of different length placed on the video timeline in accordance with one exemplary embodiment of the present invention;

FIG. 10 is a graphic representation of an exemplary embodiment of a video clip generation panel showing the effect on the viewing primary display window of sliding the time bar under the video timeline to a specific frame in accordance with one exemplary embodiment of the present invention;

FIG. 11 is a graphic representation of one exemplary embodiment of a music video player control panel together with a viewer panel, expanded by an exemplary embodiment of the community panel in accordance with one exemplary embodiment of the present invention;

FIG. 12 is a graphic representation of the exemplary embodiment of the community panel of FIG. 11, further expanded by the addition of one exemplary embodiment of a dedication window which is used for personalizing the music videos with textual messages in various formats for incorporation into the video project itself in accordance with one exemplary embodiment of the present invention;

FIG. 13a is a graphic representation of an exemplary embodiment of the initialization setup window shown in FIG. 1a showing two levels of expansion of the music player control panel in accordance with one exemplary embodiment of the present invention;

FIG. 13b is a graphic representation of the exemplary embodiment of the initialization setup window shown in FIG. 13a, further expanded by the selection of an item on a playlist menu in accordance with an exemplary embodiment of the present invention;

FIG. 14 is a graphic representation of an exemplary embodiment of the video clip generating panel showing the application of transitions in accordance with an alternative exemplary embodiment of the present invention;

FIG. 15 is a graphic representation of the exemplary embodiment of the video clip generating panel shown in FIG. 14, further showing the transition selection panel in accordance with an alternative exemplary embodiment of the present invention;

FIG. 16 is a graphic representation of an exemplary embodiment of the video clip generating panel showing a drop down menu; and

FIG. 17 is a graphic representation of an exemplary embodiment of the video clip generating panel showing a drop down menu for choosing whether to open an existing project, to make a new project or to allow the computer to make one automatically in accordance with the present invention.

Detailed Description Of The Exemplary Embodiments

The present invention provides a system which transforms the nearly completely passive experience of using a computer to listen to a CDX music product while viewing accompanying graphics which have been provided by the record label into one where the user can now express creative energy and transform the provided graphics, or personally favored imported graphics, into one or more video clips which can be synchronized to the music track on the CDX or any digital music, regardless of the source, and shared with the world.

The present invention is designed to be compact to facilitate its being packaged either on the data track of an enhanced CDX, or distributed via the Internet or other known networking and data transfer methods. In either case, it is desirable to have a compact, but robust engine, which is still easy enough for the use of young people of all ages. Thus the video generating engine and the video player of the present invention actually consist of one main software module, which can be compressed to a size of about 4 MB, all combined. The graphic resources can either be packaged together with the generator and player software module or come from such sources as the record labels' Websites, the artists' Websites or practically any other source in practically any known picture file format, e.g. .gif, .jpg, .bmp, .pcx, .tiff, .avi etc.

With reference to FIG. 1a, it can be seen that the first interface generated and presented by the software engine of the present invention is that of an initialization interface 10 which is divided into a lower music player control panel 12 and an upper monitor control panel 14. Each panel 12 and 14 has thereon an expansion button 16 and 18, respectively, which when activated, for example, by a

mouse click give rise to functional extensions which will be shown and described further hereinbelow. Monitor control panel 14 has a viewing window 20 in which video projects are viewable. A video clip selection button 22 is provided for allowing a user to access a menu which permits him to do things such as make a new combination of a video clip with a particular music track, view an existing video clip/music track combination (a project), or allow the computer to automatically assemble a new video clip to be combined and played back with a selected music track. This last feature will be described further hereinbelow. A video resources selection button 24 permits a user to select the visual library, contained in a .vvs file, which he wants to use for assembling into a clip for playback with a music track. A video effects button section 26 permits the receiver of a clip to choose various macro viewing effects for application onto the video clip which help to simulate a discotheque atmosphere. The effects, termed VJ-Modes ("VJ" referring to video jockey) are chosen by selecting one of buttons 28-40 and the effect might include applying black noise to a clip, applying color noise to a clip, making the clip appear as if it were being projected from an old celluloid motion picture reel (having purposely imposed imperfections), having superimposed psychedelic hoops, viewing in video wall mode (multiply repeated miniscreens showing the clip in miniature), magic squares mode (floating, moving squares with the clip shown therein), and having infobubbles (superimposed cartoon bubbles containing textual messages) which might provide promotional messages or biographical information about the artist. Usually such information will derive from the recording company or artist or alternatively could be provided by the clip creator, i.e. to allow personal commentary or satire about the clip or music, etc. In FIG. 1a, the information resource file from which such infobubble information is drawn is shown as being a .vin file which is selected by button 84.

On music player control panel 12, with reference to FIG. 2a, there are located various control buttons 42-52 of the type normally associated with a CD player, i.e. stop 42, play 44, next track 46, previous track 48, shuffle play 50, repeat play 52, a volume control 54 and the like. For specialized features associated specifically with the present invention, there are also found there a button 56 for loading music tracks saved in locations other than on a CD and a button 58 for automatically retrieving

official bonus clips associated with an artist's CD, for example by downloading from a designated Website. A button 60 is provided for alternately closing and opening monitor control panel 14. Button 64 puts the monitor control panel 14 into an Internet browser mode whereby the browser of the present invention is automatically directed to a Website which has video clips, official graphics and a clip exchange page for exchanging or viewing posted clips made by others.

With reference now to FIGs. 1b, 11 and 12, it can be seen that button 62 opens a community panel 68 which provides access to various tools for personalizing and sharing clips. For example, as seen in FIG. 11, the invite button 68 opens an invitation generating facility 70 for either inviting friends to view the clip which can either be uploaded for viewing at a Website or which could be attached to an e-mail and sent directly to the friends. With reference to FIG. 12, selecting the dedicate button 72 opens a dedication panel 74 for personalizing a clip by such utilities as attaching to it the graphic resource file containing the "unofficial" graphics which the creator used to make the clip; attaching a .vin file containing text bubbles and other text you have used to comment the clip with; or creating a personalized message for streaming across the clip while it is being played.

Referring now to FIG.s 2a and 2b, there is shown the effect of activating expansion button 16. The selection of expansion button 16 causes the expansion of music player control panel to provide an expansion panel 76 user access to further functions for organizing the music tracks available either on a CD or saved locally in music format files, e.g., .mp3, wav, etc. Buttons 78, 80 and 82 are links to URLs which might launch the browser and access the artist's Website, or find and display the song lyrics or link to a site for purchasing music (for example if listening to a sample of an audio track). Selection of button 82 on expansion panel 76 provides a user with options for saving music tracks and the information associated with them, as can be seen with reference to FIG.s 13 and 13a.

Referring to FIG. 3, one can see the result of activating expansion button 18 on initialization interface 10. Monitor control panel 14 expands to become a video clip generation panel 86 which is used for the assembly of a video clip insynchrony

with a selected music track. In addition to incorporating music player control panel 12 and viewing window 20, there are added several important graphics tools, including a selection of foregrounds 88, backgrounds 90, import facility 92, and special effects buttons 94 and a timeline 96 onto which a desired graphic frame may be dropped and synchronized in real time with the music track of which the timeline 96 is a graphic representation.

As will be shown with further reference to FIG.s 3 et seq, the process for creating a video clip is as follows: a creator uses the tools on the music control player panel 12 to select a music track for which he wants to build and synchronize a video project. The timeline 96 is then adapted to graphically represent the playing time of the music track. The creator then builds one frame at a time using the graphics tools 88, 90, 92 and 94 to choose or importing a background graphic and/or a foreground graphic and then applying a special effect if desired. When the creator has achieved a desired look for a particular frame, the frame is dropped onto the timeline by selecting the drop frame button 96. The creator can then adjust how long he wishes the frame to be displayed by clicking on the frame and dragging one of its side borders either towards or away from the opposite side border.

With reference to FIG. 4, it is seen that when a creator selects the foreground tab 88 and then selects a thumbnail image 98 among those offered, the full size image appears in viewing window 20. A creator can then choose to apply a background by selecting the background tab 90 and then selecting a thumbnail image 100 which appears full size behind the foreground image in viewing window 20, as shown in FIG. 5. A creator might then apply a special effect to either or both the background and foreground by touching part of the viewing window 20 they want to affect and then selecting one of the special effects buttons 94 (this step could also have been done to the foreground or background before they were combined). As shown in FIG. 6a, selection of the mosaic special effects button 8 brings up a window 102 for adjusting the intensity of the effect on the background. When the check mark is clicked, the mosaic effect is applied to the image in the viewing window 20. It should be understood that the selection of other special effects will have other consequences or follow-up adjustment windows displayed. It should also be

understood that even where a thumbnail image 98 might be static, the image represented by the static thumbnail image 98 could be a moving image such as a snippet of video in .avi format or Quicktime format.

The special effects which could be placed at the creator's disposal is practically without limit and deciding which ones to include in a commercial embodiment of the present invention would be largely governed by space considerations, targeted customer demographics and the cost of developing the programming for the effect. An exemplary embodiment of the present invention having a footprint of less than 4 Mb permits the following special effects to be applied to the frame in the viewing window 20 with one or two clicks of a mouse button: frame invert, poster, grayscale, colorize, hue, flip/rotate, mosaic, contrast, sharpen, emboss, noise, texture effects, and blur.

With reference to FIG.s 7 and 8, when the creator is satisfied with the image in the viewing window 20, he selects the drop frame button 98 and this generates a thumbnail shadow frame 104 which can be dragged and dropped into place on the timeline 96. When the shadow frame 104 is placed in position, it becomes a clip thumbnail 106 of the image which was in the viewing window 20 when the drop frame button 98 was activated. At this point, in one embodiment of the present invention, the script which describes the image represented by the clip thumbnail 106 is added to a script file which ultimately will have compiled therein all the bits of script which describe the stream of clip images which has herein been referred to as a project. In another exemplary embodiment, the writing of the scripts can be completed when all the clip thumbnails have been positioned on timeline 96 and been adjusted for length as will now be described.

In FIG. 9, it is illustrated that a full project is comprised of a stream of clip thumbnails 108. It is also evident that the size of the clip thumbnails 108 is heterogeneous. This is so because the clip thumbnails have been adjusted by the project creator according to how long he wishes each frame to be displayed. The adjustment is accomplished by clicking on the frame to frame to be adjusted and dragging one of its side borders either towards or away from the opposite side

border. Thus clip thumbnail 110 has been expanded to about 3 times its former length signifying that it will be played for three times its unit time length during the playback of the project. In contrast, clip thumbnail 112 will be displayed for about 1-½ times its unit time length on playback.

FIG. 10 is a graphic representation of an exemplary embodiment of video clip generation panel 86 showing the effect on viewing window 20 of sliding a time bar 114 under video timeline 96 to a specific frame 116 in accordance with one exemplary embodiment of the present invention.

The programming to generate the video clip generation panel 86 is compact enough to easily fit on the data portion of CDX enhanced music CDs, or to be transmitted over the Internet, and is both powerful and flexible, yet sufficiently easy to use to encourage young people to be creative using it.

By providing a video clip generating panel that incorporates a timeline that graphically represents the total time of the music "cut" to which graphics are being applied a youthful creator is empowered to write a script in a completely transparent way. Additionally, as opposed to simply creating a single large graphics file, which strings together numerous graphics files, the video generation script permits the transmission of a video without the need to actually transfer large, bulky graphics files. Graphics referred to by the script of the project only need to be transmitted when they are not originating from the CDX itself, or the common library on the artist's Website. If the graphics are not available or desired, a viewer can use whatever set of locally available graphics he wants by using the graphics import facility 92 to create his own visual library for use by the script upon execution of the playback program.

The use of a script also facilitates editing of the script rather than having to start writing a new file from scratch. The editability of the scripts generated by the system of the present invention thereby facilitates remote collaboration on a single music video by numerous, or even endless individuals.

Graphics resources only get transferred if so desired by the project creator, i.e. if they are unique to the creator's graphics collection. The script can be uploaded or sent by e-mail via the community panel 66 to a Community Website from which other users can download and play it, either together with the graphics resources associated with it or alone.

FIGs. 11 and 12 show the dedicate dialog 74 opened by pressing dedicate button 72. These allow the creator to send his/her project with some additional information, such as text in cartoon bubbles and a text messages which are streamed across viewing window 20 during playback.

The result is a form of greeting card, created by the user from scratch, and comprising full motion video in synchronization with a particular desired musical track.

- 1) Community Capabilities shown include:
 - a) Dedicating Clips, Graphics, Text
 - b) Inviting Friends: To User Page or Clip Premiere
 - c) Chat to Share Views and Critique Videos
 - d) Links and Online Search Engine to Artist-related sites
 - e) Upload and Download Feature to Share User-created Clips

The present invention provides an interactive graphic environment for the generation by end-users of high quality video productions for synchronous play with audio music usually provided on CD media, and having playback in a high quality audio format.

One of the innovative features of the present invention is its ability to synchronize a video clip being created with an original CD soundtrack (or a track derived from another source, such as a downloaded .mp3 file). The Blue Book specification defines an enhanced CD (or CD EXTRA) format. These discs contain two sessions or track groupings. The first session contains audio tracks; the second session contains a single data track. When an enhanced CD is played on an audio

player, the player only reads the first session and does not try to play the data session. The CD drive of a personal computer recognizes both sessions, allowing accompanying software (for example the music generating video software of the present invention) to be run while audio tracks are played.

The software of the present invention is a user-friendly tool, which was created bearing in mind its intended audience of teenagers aged 12-17 although it is expected that it holds great appeal for children both younger and older than this range. It includes many professional quality graphic design capabilities, such as graphic filters, transformations, transitions, etc., yet it is extremely simple to use by end-users with various levels of computer skill. Another innovative feature of the software of the present invention is the package of self-contained unique dynamic graphic effects activated by special effects buttons 26. These effects transform a static image into a dynamic one, by simply clicking on a dynamic effects button to apply the effect to whichever background or foreground frame is currently in the viewing window 20.

The interfaces can be built using "skin" technology (which permits changed interface without changing engine) for its graphical user interface ("GUI"), so it can be very easily and quickly customized for new discs, new artists, etc. An example of skin technology is shown in FIG. 16 in which selection of the "skin" option on the menu 124 allows the selection of a different color scheme for all interface borders. It enables the creator to import his/her very own resources to be used in the creative process.

As previously described hereinabove, each frame 106 represents individually adjustable time units which, when placed on timeline 96, represents how the visual graphics are linked in a fully synchronous manner with the audio track of the CD. Each sequence can be created by combining backgrounds (static or video) and foregrounds (static or animated). Sequences may also be created using simply graphic effects and transitions with or without graphic resources. By adjustable time unit, it should be understood that each frame 106 can be lengthened or shortened, in time increments which could be as little as fractions of a second to 30 or even 60

seconds each. With reference to FIG.s 14 and 15, it is shown that by activating a transition button 120, a transition selection panel 122 appears to facilitate selecting a transition from one video clip frame to the next.

Each combination of sequences, i.e. "a project" is saved as a data script that does not contain the actual graphic resources involved. This technology makes possible the assignment of any graphic resource from any source (client or server) to an already, pre-designed clip.

The builders of the present invention employed Object-Oriented Design (OOD), that is, a design method in which a system is modeled as a collection of cooperating objects and individual objects are treated as instances of a class within a class hierarchy. OOD is one of the stages of object-oriented programming (OOP). The present invention has an open architecture and can be easily upgraded with new features and extended with third party components such as video codecs, graphic filters and data formats. The present invention was written with Microsoft Visual C++® 6.0 IDE, MFC class library and LEADTOOLS® 10 graphic library. It was designed accordingly to OOD methodology and was written using OOP approach.

The object-oriented approach provides a programmer and end user with much more control over the objects in the applications, at runtime as well as design time. OOP also make it easier to create and maintain libraries of reusable code, giving:

- a) the ability to quickly add complex functionality to application components;
- b) the ability to hide unnecessary complexity; and
- c) easier code maintenance.

The use of DirectX technology provides a consistent interface between hardware and multimedia applications, reducing the complexity of program configuration for specific hardware. DirectX is a type of API (Application programming interface) that acts for Windows 95/98/2000/NT and various types of hardware. By using the interfaces provided by DirectX, the present invention takes advantage of hardware features without being concerned about the implementation details of that hardware.

The script is a kind of template, describing the time frame's place on the timeline, frame's features, such as the transition applied, the total number of resources per frame, the visual effects applied to (any) resource, their parameters and the order of applying. The script includes only links to resources and can be easily applied to any other resource set. The script should be considered as a special template letting the graphic artist produce some set of visual techniques and easily reproduce it in future works.

The invention is constructed with an open architecture that is based on COM methodology that permits the product to be easily extended by adding new features, for example in the form of ActiveX components. The Component Object Model (COM) is a platform-independent, distributed, object-oriented system for creating binary software components that can interact. COM allows an object to expose its functionality to other components and to host applications. It defines both how the object exposes itself and how this exposure works across processes and across networks. COM also defines the object's life cycle. Using COM technology, software components are reused depending upon the behavior of the object and not the exact implementation. This feature allows one to:

- a) easily modify and /or upgrade the invention (add/change components);
- b) easily communicate with the third party components;
- c) easily embed the third party components into the invention;
- d) easily embed the invention into existing environments; and
- e) easily link the projects made by the user using the present invention to the Internet.

The client-server technology is a common form of distributed system in which software is split between server tasks and client tasks. A client sends requests to a server, according to some protocol, asking for information or action, and the server responds.

This is analogous to a customer (client) who sends an order (request) on an order form to a supplier (server) who dispatches the goods and an invoice

(response). The order form and invoice are part of the "protocol" used to communicate in this case.

The present invention CD Version –

As mentioned above, the data portion of the enhanced CD has been of very poor quality up until today partially for capacity reasons. The present invention CD version code is both sophisticated in its scripting and synchronization capabilities, thus giving users quality interactivity in a very limited capacity. As a result of continuing development of audio technology on the Internet, the beginnings of some promising, quality Internet compression audio formats are emerging, MP3 for example, as well as streaming audio delivery. Some Internet sites are beginning to allow downloads of music in the MP3 format and today's users are showing keen interest.

The present invention CD version already recognizes and uses the visual Internet formats MPEG, JPEG, GIF. Also this version will have more interactivity features for audio, for example: audio remix, audio dub. The present invention is a tool that combines both clip watching and making with client-based capabilities of communicating with other users that are members of the community. Communication includes: downloading, uploading and dedication of either projects, graphic sets and information bubbles similar to cartoon text bubbles.

Infobubbles superimpose textual and/or graphic information in semi-transparent or transparent graphic bubbles that appear on the music clips. The information can contain promotion info, advertisements, a customized portal or a simple text written by either client or server.

The Online Community extension

The present invention links you to the World Wide Web. Today's music lovers/buyers do not have a dynamic, bi-directional on-line community. The application of the present invention links directly to the Internet without reliance upon an external Internet browser. Users can upload and download projects and resources, send and receive information, present and view others' work, or just chat

and download the latest from their favorite artist. These features are the basis for a real on-line community.

The On-Line Community extension offers a sophisticated mailing list function to facilitate the ability of users to send and receive updates and invitations from other users to view their work and other database features such as smart searches and communication tools for sharing projects and communicating. The present invention can be used to facilitate such promotional events as contests and competitions as motivators to enhance the community.

The present invention supports many popular Internet formats. Clips produced with the present invention can be easily rendered to one of the streaming video formats and viewed online, or downloaded to be played by play-only products.

On the other hand, the engine of the present invention can be adapted into a plug-in for existing viewers, thereby allowing Internet browsers to understand the format of the present invention and incorporate it.

When delivered by download from the Internet or included as part of an enhanced CD, the engine of the present invention is placed on the client side of a network and can communicate with the player on the server placed on an Internet site. During the regular installation process of the present invention the client's computer is configured, so all processes of uploading/ downloading to/from the Internet site are extremely simple for users.

The present invention includes a further feature for those individuals who prefer to let the computer do the creating. With reference to FIG. 17, selecting the "computer-made" option on the drop down menu provided on activating the video clip selection button 22 activates portions of the timeline and script implementation files to execute a program which builds a script for playing a music video according to the length of the selected music track and according to general guidelines and rules such as the one which follows:

“

Rule 2**Randomly choose background.****If the background is a still image, randomly choose its length (1-5 seconds).****Randomly choose a graphic effect. (1-14)****If the length is 1-2 seconds and the effect is 5**

- 1. Apply to this background 5th effect with effect value n.**
- 2. Apply to this background a random transition.**
- 3. Copy the same background.**
- 4. Increase effect value.**
- 5. If we have less than 4 backgrounds return to step 1.“**

By following such guidelines and rules, the computer is enabled to generate a variety of video clips, depending on the length of the music piece and/or certain other factors such as style of music, rhythm or tenor of the music, etc.

The footprint of the software engine of the present invention has been designed to remain preferably at about a size of 5 Mb or less, and up to about 20 Mb if one includes a fair amount of a graphics resources in the package. Thus distribution by Internet is just as feasible as distribution aboard a CDX or across the Internet. Additionally, the scripts generated by using the timeline of the invention are as small as .5 Kb per minute of playback time and as large as about 200 Kb per minute of playback time, although in fact the scripts generally are in the range of from 1 Kb to about 60 Kb per minute of playback time. Thus a script for a project of 5 minutes duration which is accompanied by 1 Mb of personalized graphics resources might be up to about 1.3 Mb in size when sent by e-mail.

It should be appreciated that there are many variations and modifications which one of skill in the art could make without departing from the scope and spirit of the present invention. The exemplary embodiments described hereinabove are merely for illustrative purposes. The following claims should be understood as being exemplified by the exemplary embodiments but necessarily limited thereto.

What is claimed is:

1. A system for generating a music video on a computer which comprises an editing interface for creating a script of instructions for the assembly of graphic images in synchrony with music to thereby produce a music video project.
2. A system in accordance with claim 1, wherein said music is digital music.
3. A system in accordance with claim 1, wherein said graphic images are synchronized with music which is provided in the form of a streaming audio signal.
4. A system in accordance with claim 1, wherein said script can be edited by said interface.
5. A system in accordance with claim 1, further comprising a playback interface whereby said script can be loaded and said music video played by a user.
6. A system in accordance with claim 1, wherein said script can range in size from about .5 Kb per minute of playback time to about 60 Kb per minute of playback time.
7. A system in accordance with claim 1, wherein said system has a size of less than 20 MB.
8. A system in accordance with claim 1, wherein said system can be activated by a user to independently generate a script for a music video.
9. A system in accordance with claim 7, wherein said script is generated by said system using as guidelines only the length in time of a selected music track and pre-programmed rules for choosing and combining graphic images and visual effects.

10. A system in accordance with claim 1, wherein said music comprises a selected musical track, said musical track being graphically represented as a timeline by said editing interface.
11. A system in accordance with claim 10, wherein a display instruction in said script is written when a user selects at least one graphic image and applies said graphics image to said timeline.
12. Software media which comprises a system for generating a music video, said system comprising an interface for generating a script of instructions for the assembly of graphic images in synchrony with music to thereby produce a music video project, said software media comprising computer-readable memory.
13. The software media of claim 7, wherein said media is selected from the group consisting of compact discs, floppy diskettes, hard drives, DVD, and flash memory.
14. A music video exchange network comprising at least two computers in electronic communication with one another and wherein at least one of said two computers has stored therein a system which can be operated for generating a music video on a computer, said system comprising an interface which can be operated for generating a script of instructions for the assembly of graphic images in synchrony with music to thereby produce a music video project and at least one other of said at least two computers has stored therein programming to provide thereon a playback interface whereby said script can be loaded and said music video played by a user, said network further comprising means for electronically transmitting said script between the computers which comprise said network.
15. The music video exchange network of claim 9, wherein said network is a wide area network having at least one server computer and one client computer connected electronically to said server computer.

16. A network in accordance with claim 10, wherein said system may be downloaded from said server to said client.
17. A network in accordance with claim 10, wherein said playback interface is located on said server.
18. A network in accordance with claim 10, wherein said playback interface is located on said client.
19. A music video script assembled by using a system for generating a music video on a computer which comprises an editing interface for creating a script of instructions for the assembly of graphic images in synchrony with music to thereby produce a music video project.
20. A system in accordance with claim 1, comprising means for transmitting a script built using said system to a remote computer.
21. A system in accordance with claim 20, wherein a user is provided with a dedication and personalization interface for adding, deleting or editing said script to include personalized textual messages and overlays.

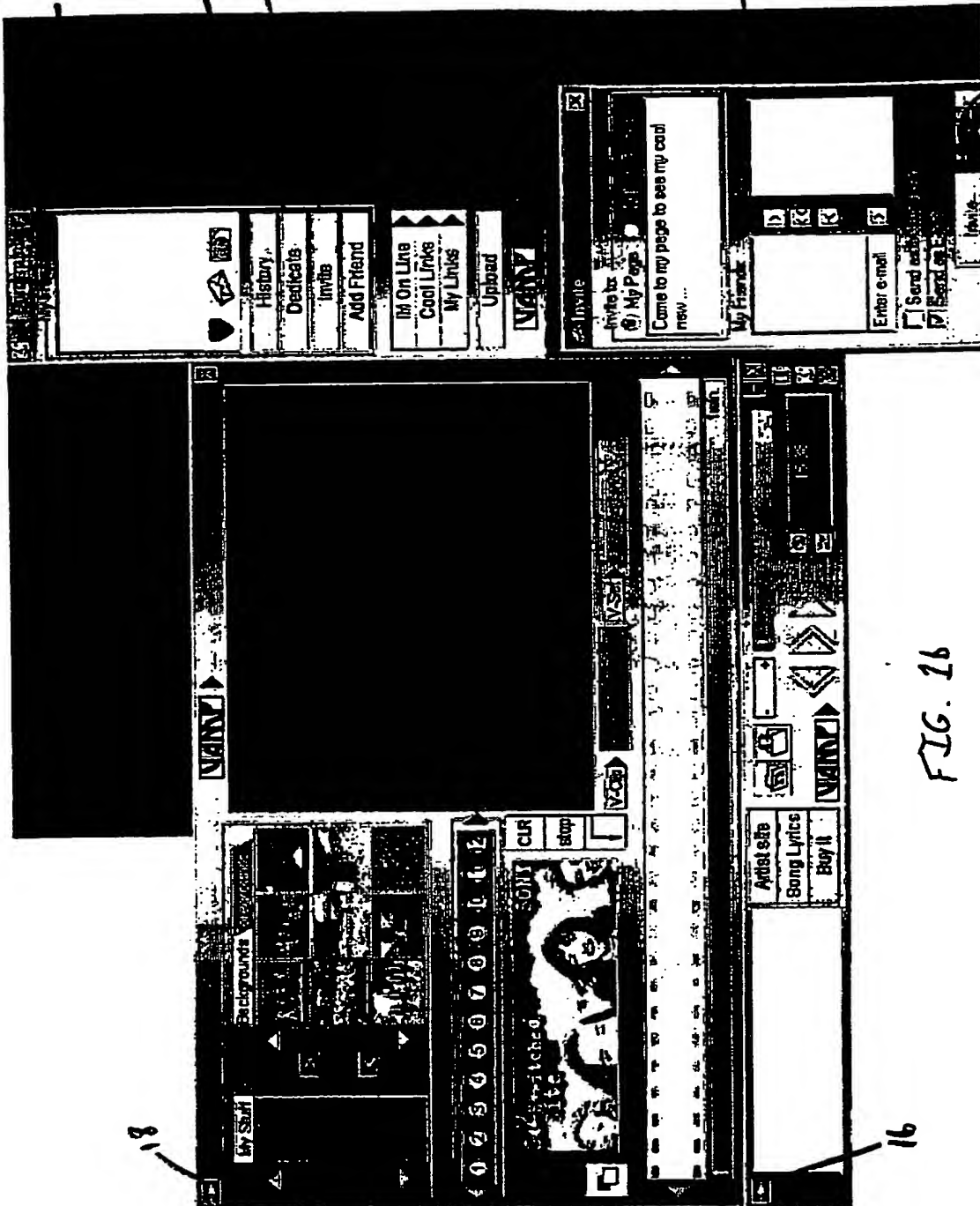


FIG. 1b

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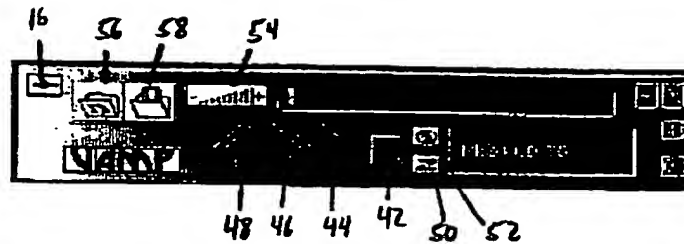


FIG. 2a

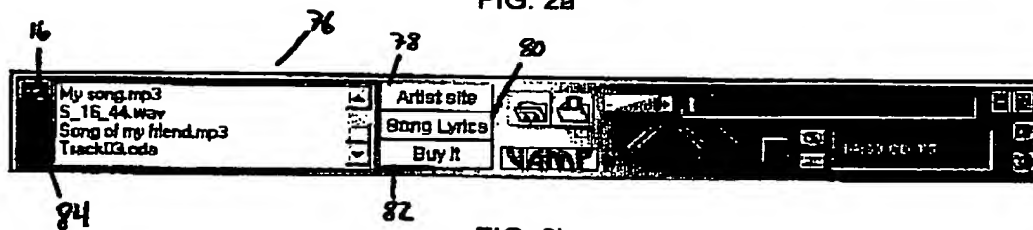


FIG. 2b

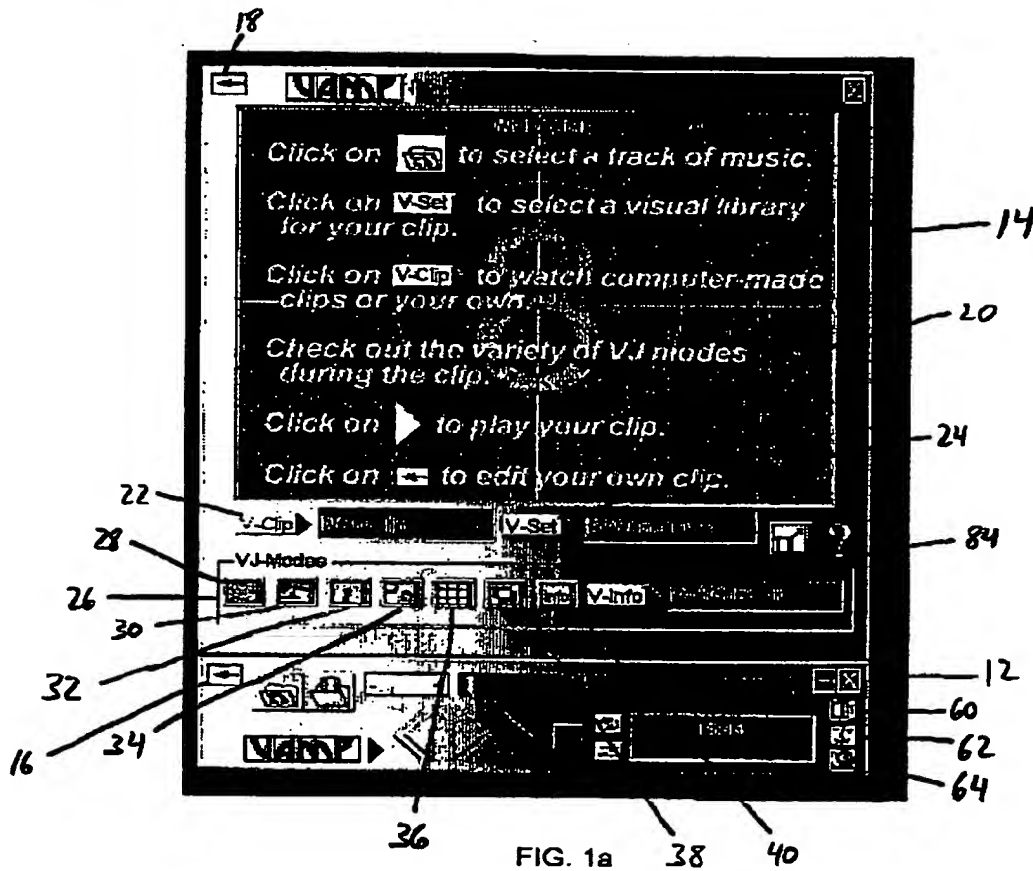


FIG. 1a

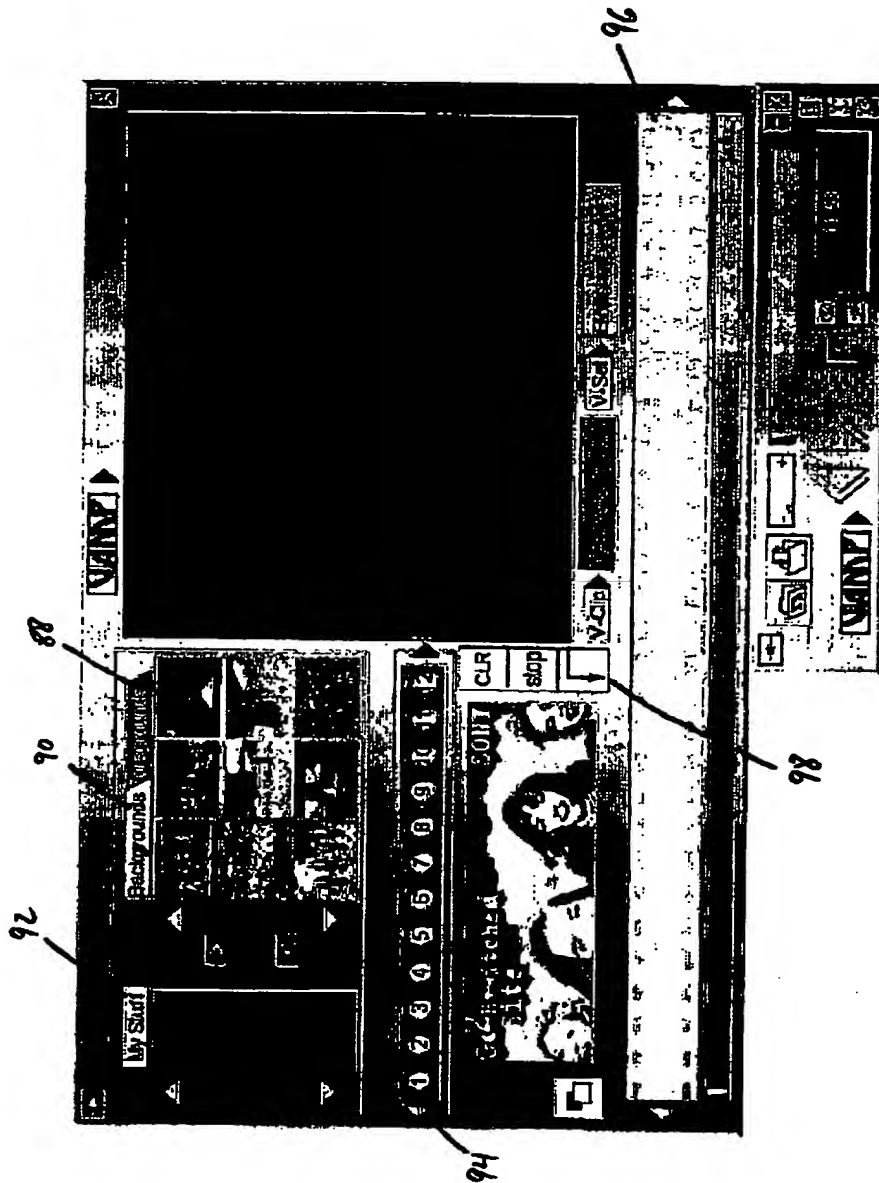


FIG. 3



FIG. 4

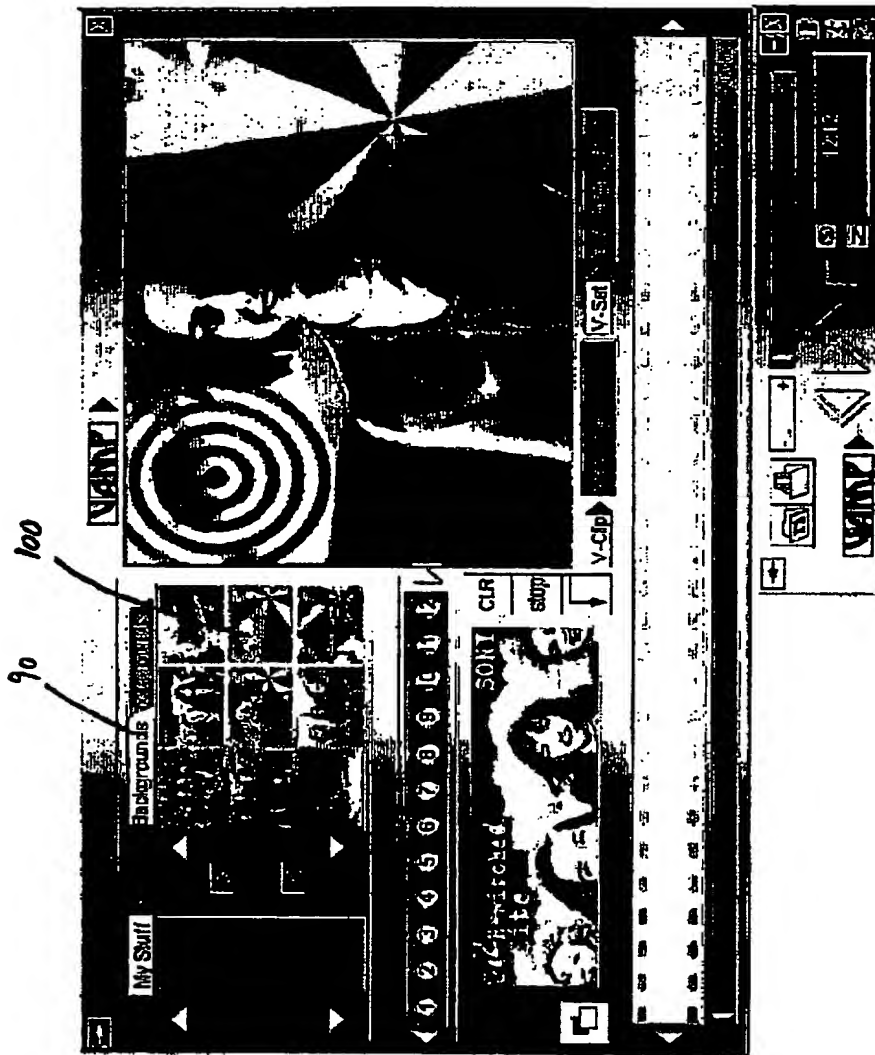


FIG. 5

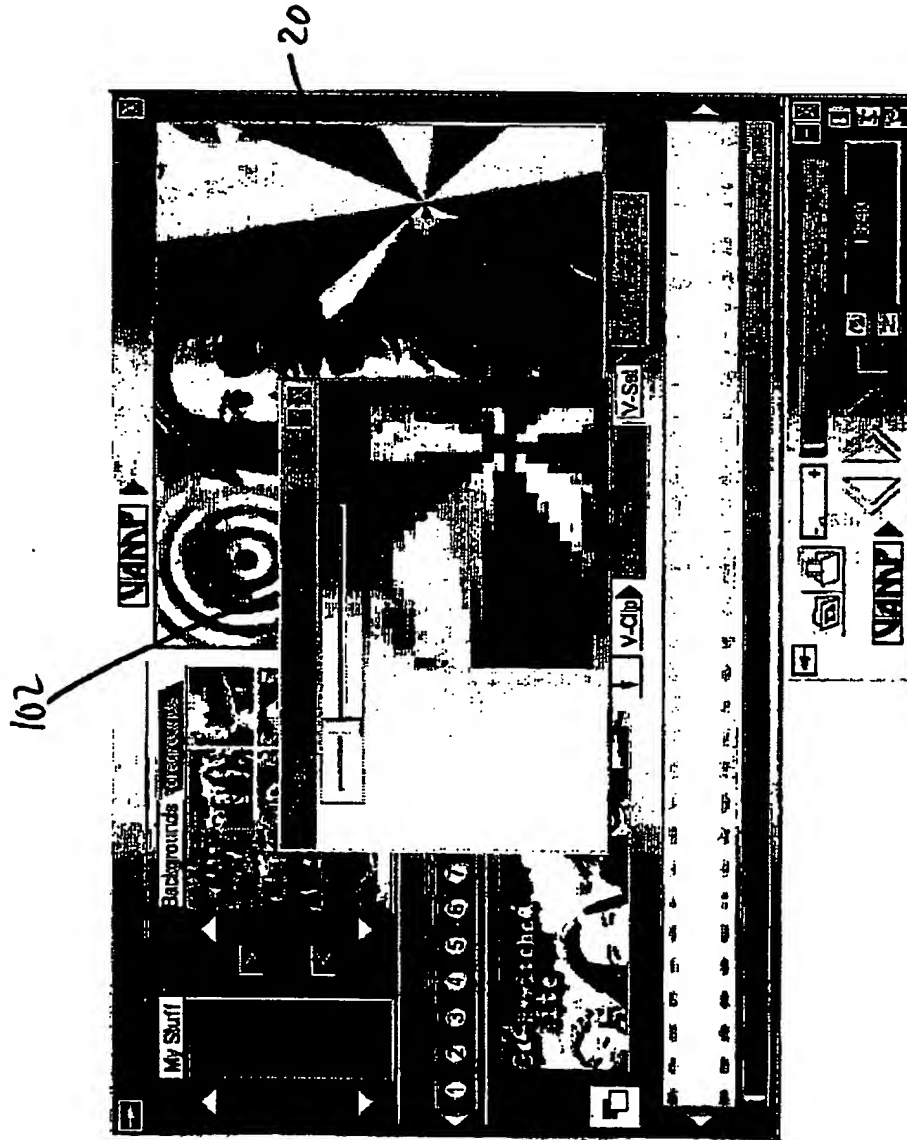


FIG. 6a

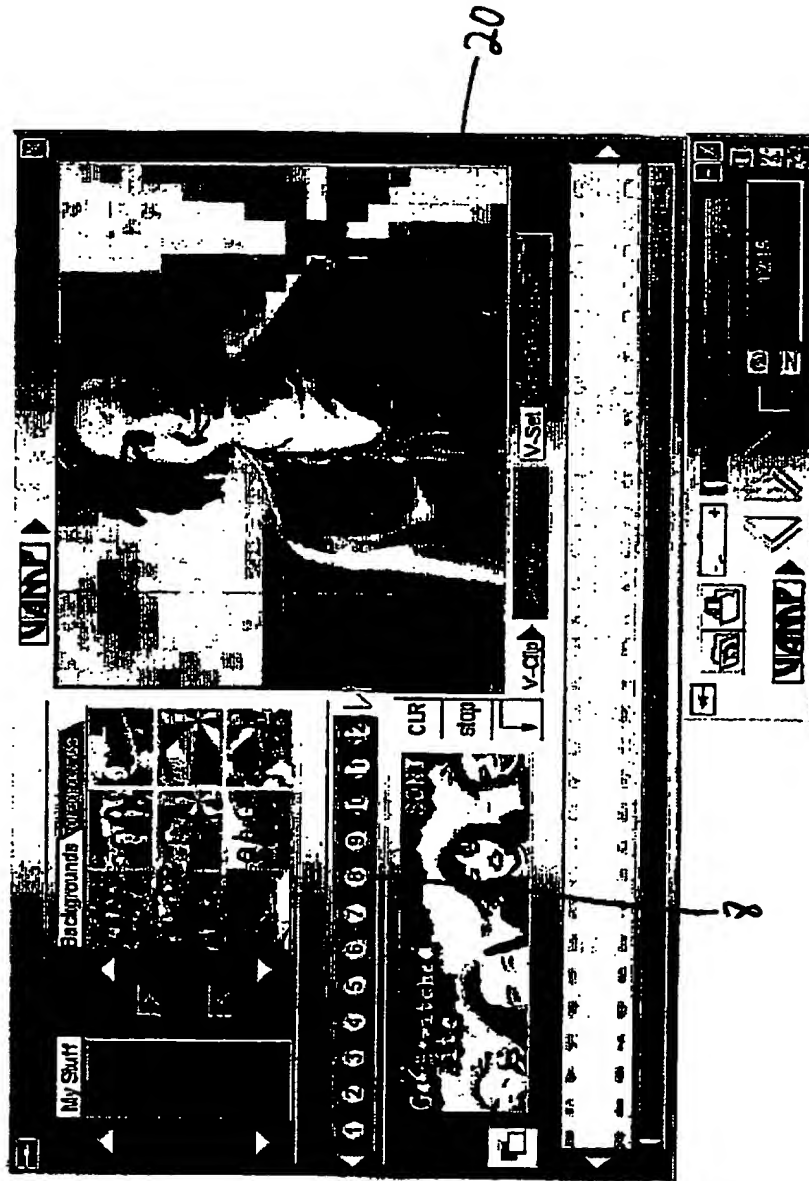


FIG. 6b

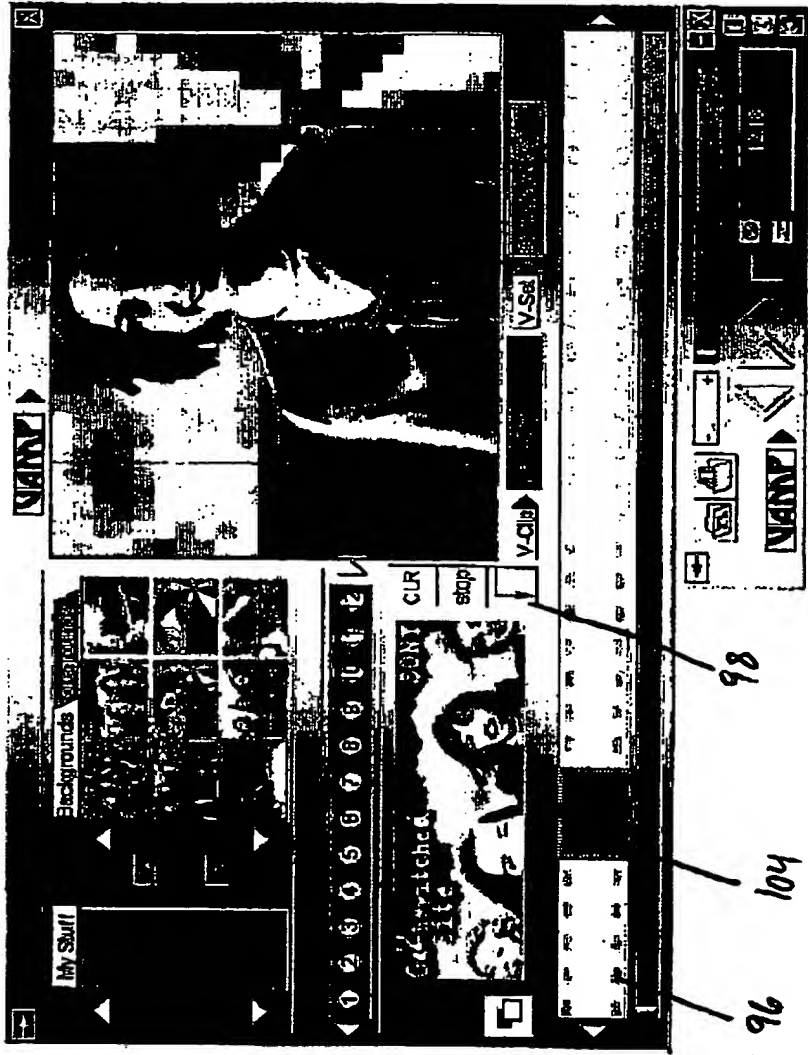


FIG. 7

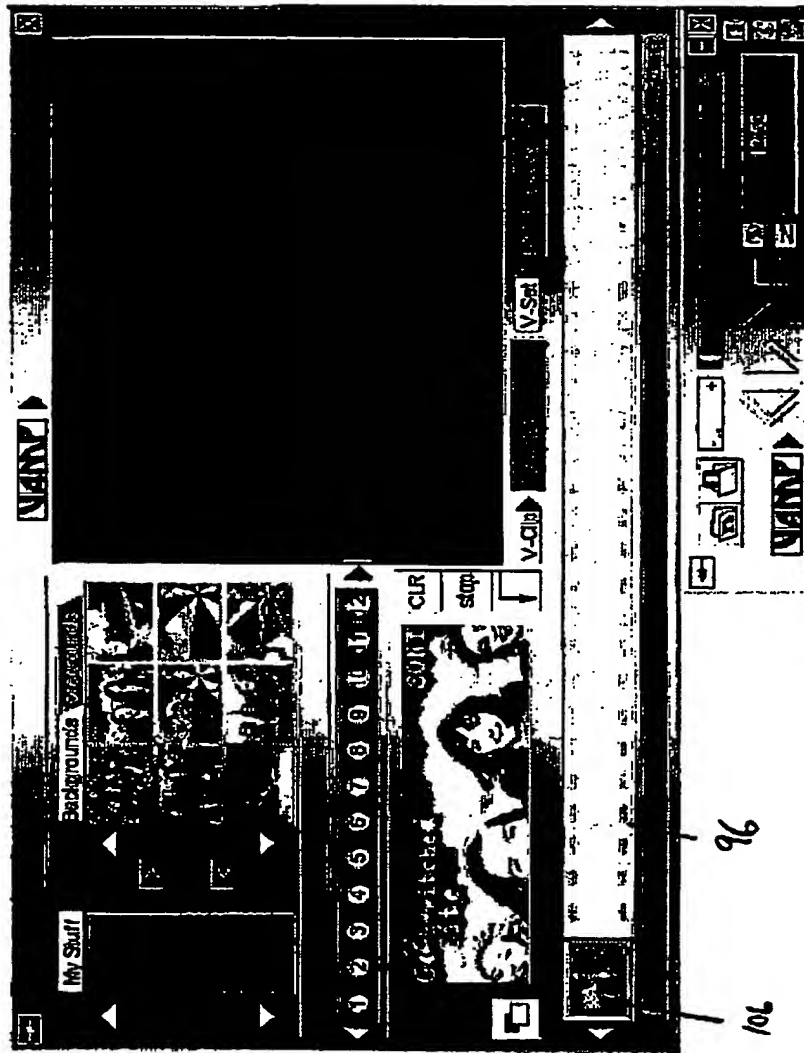


FIG. 8



FIG. 9

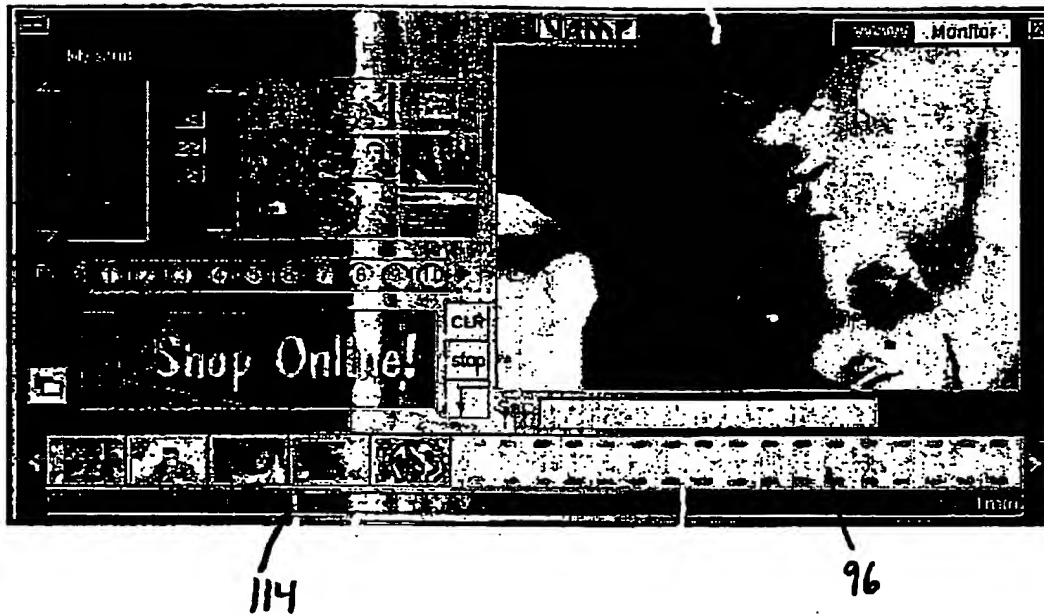


FIG. 10

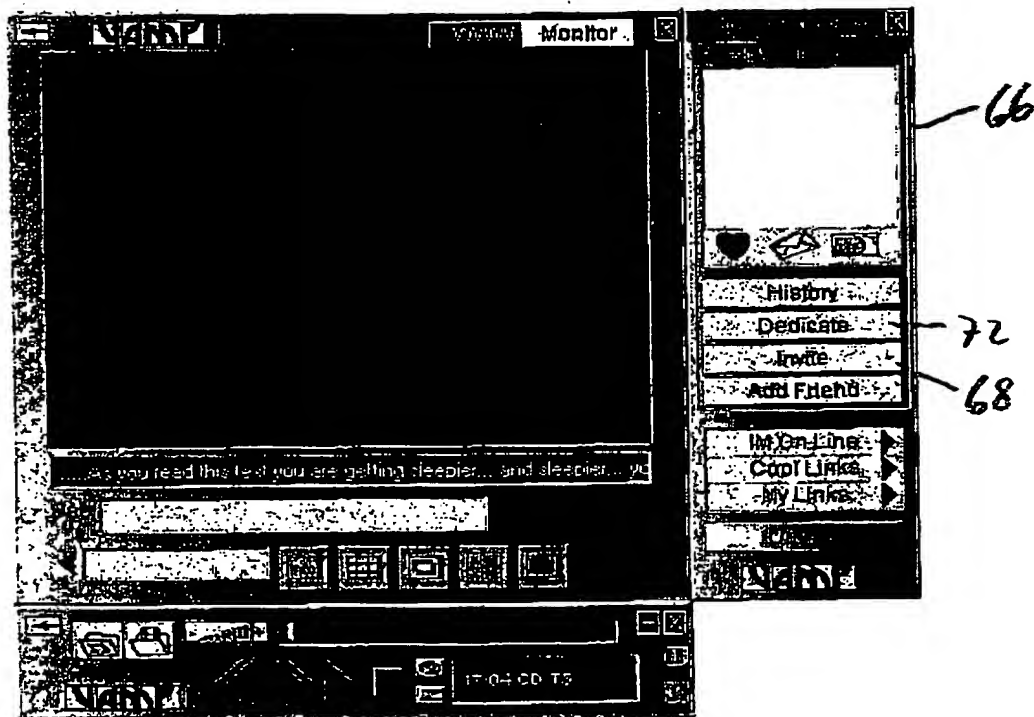


FIG. 11

FIG. 12

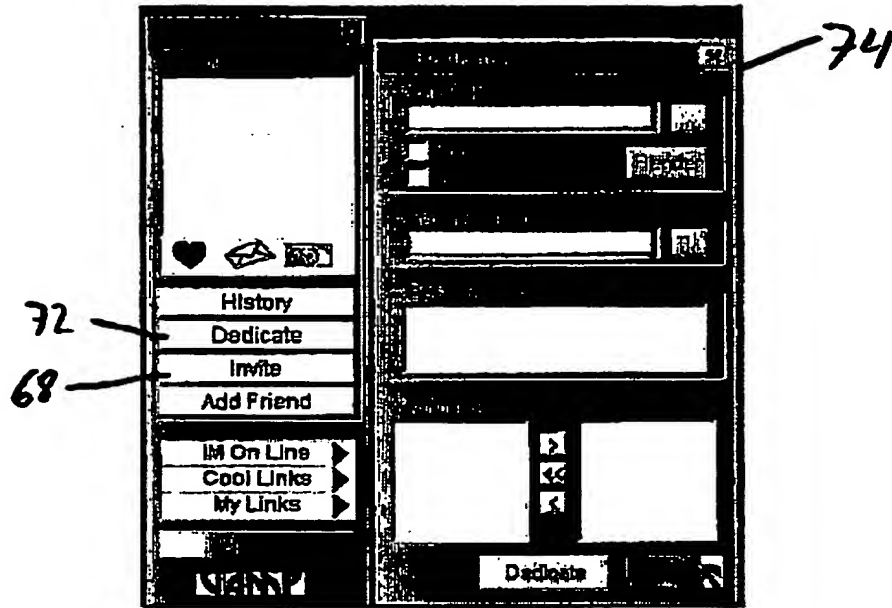
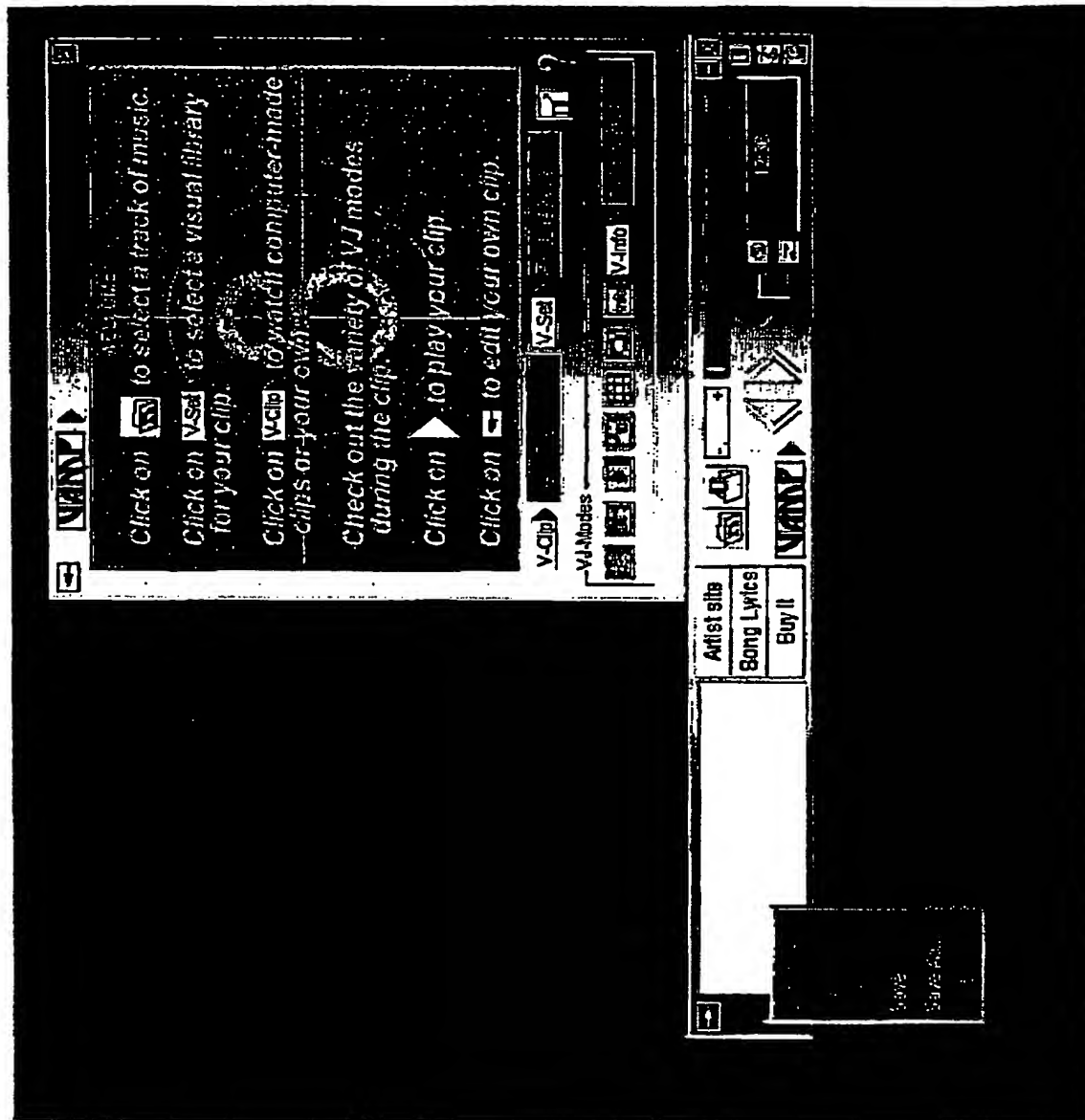


FIG. 13a



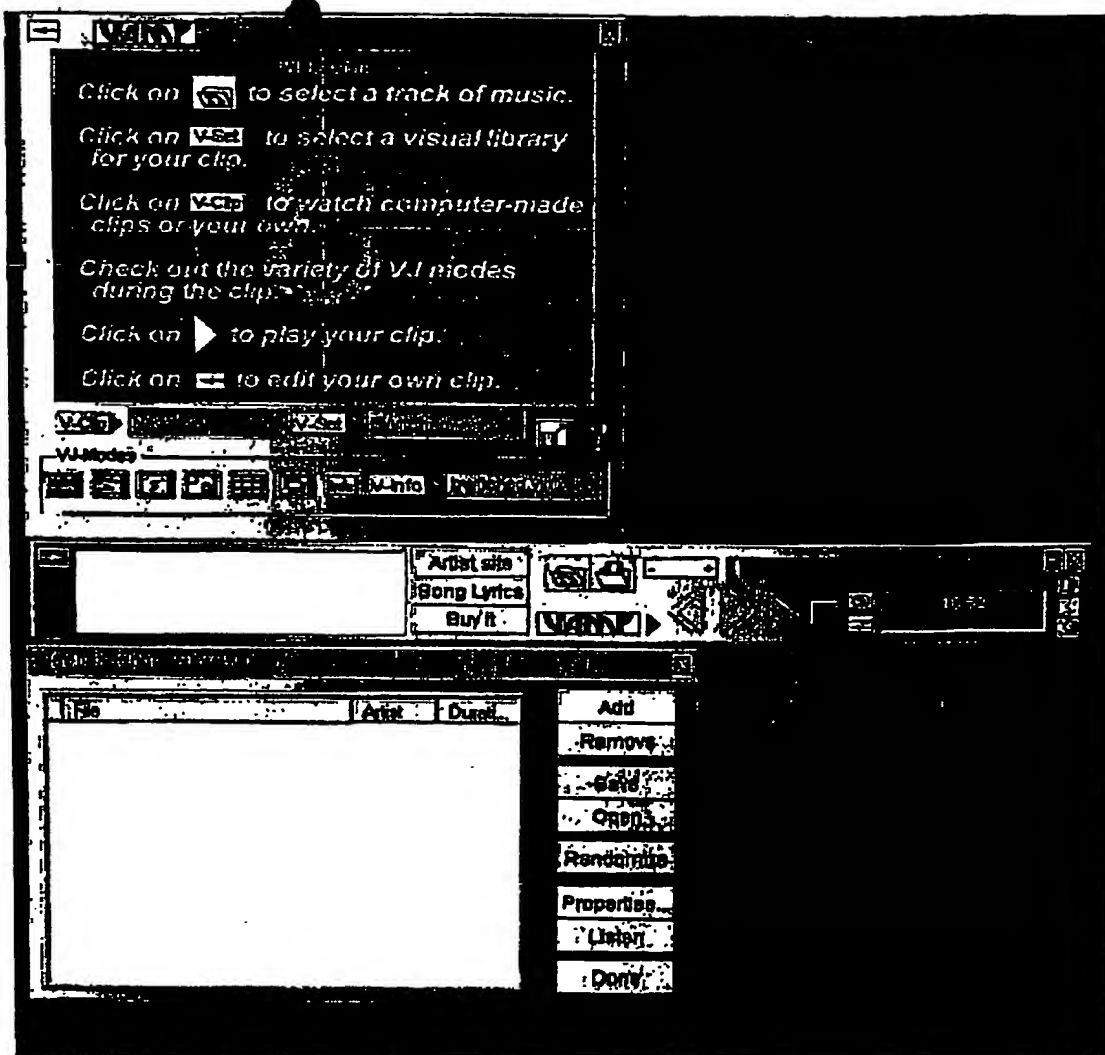


FIG. 13b

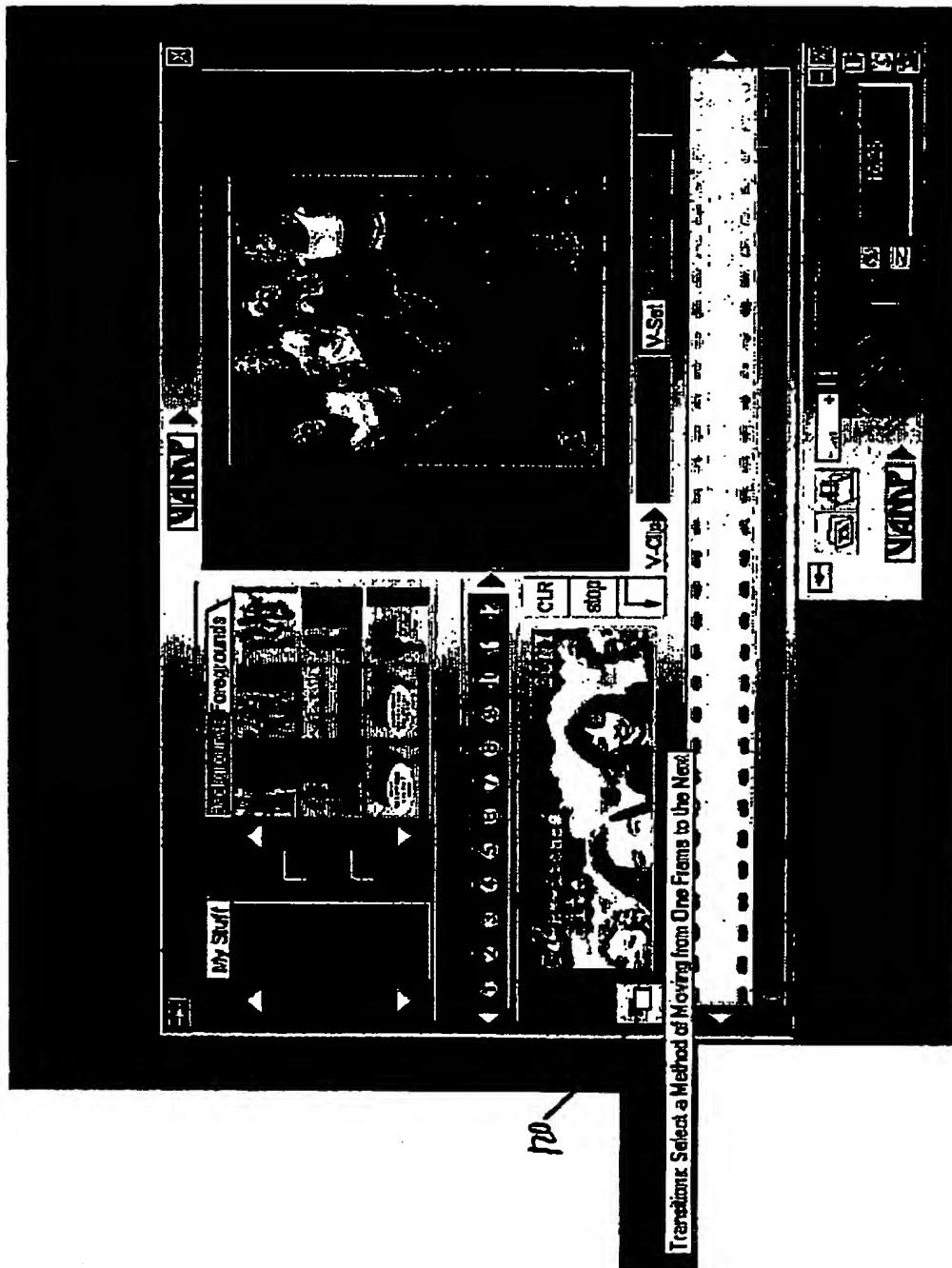


Fig 14

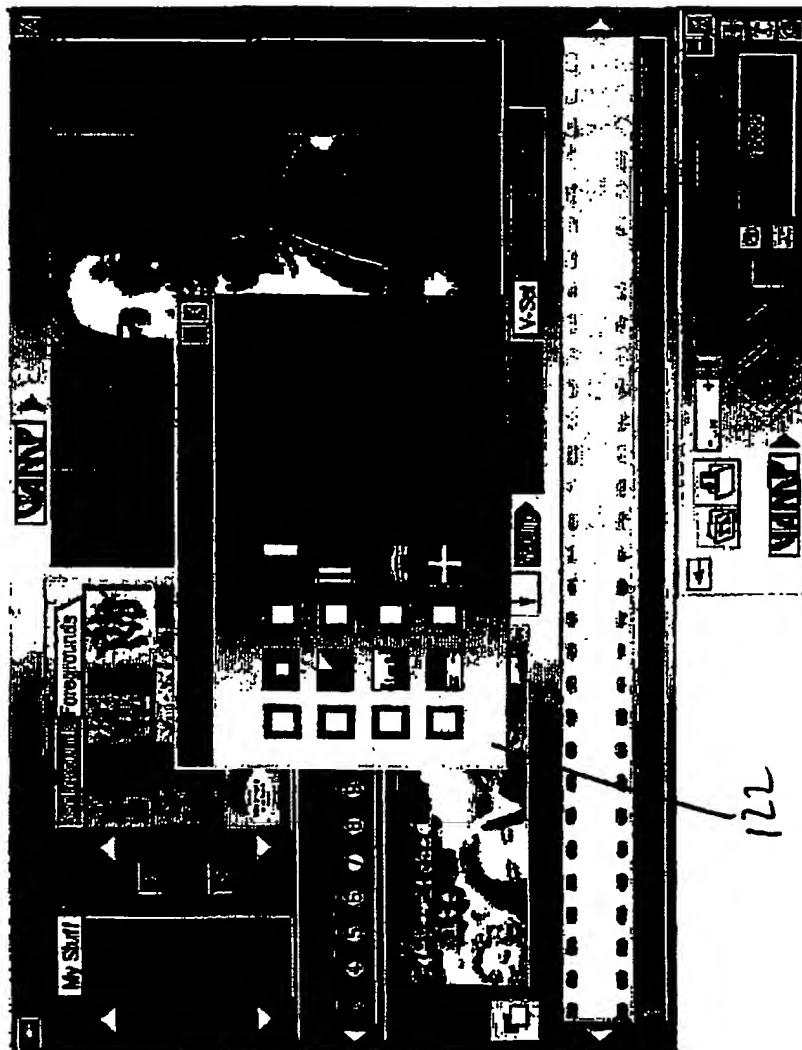


Fig. 15

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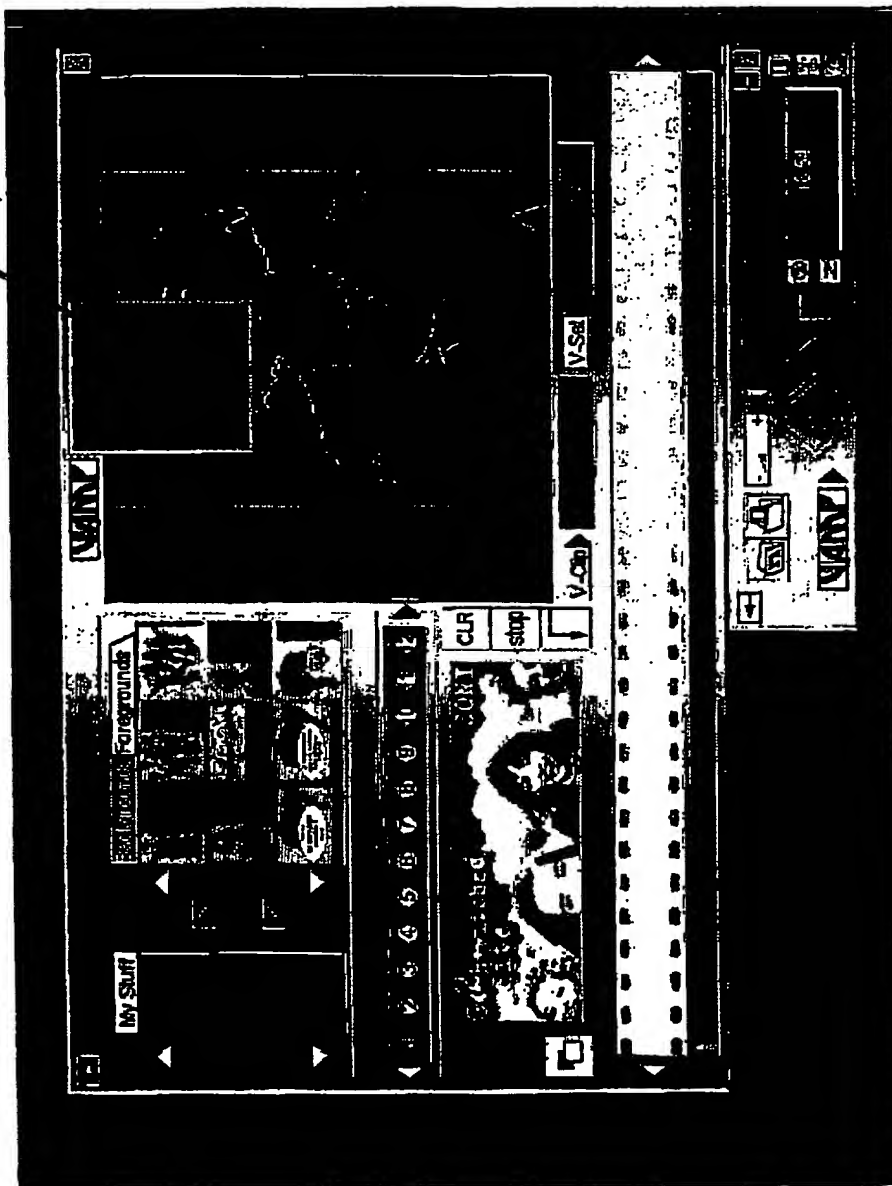


Fig. 16

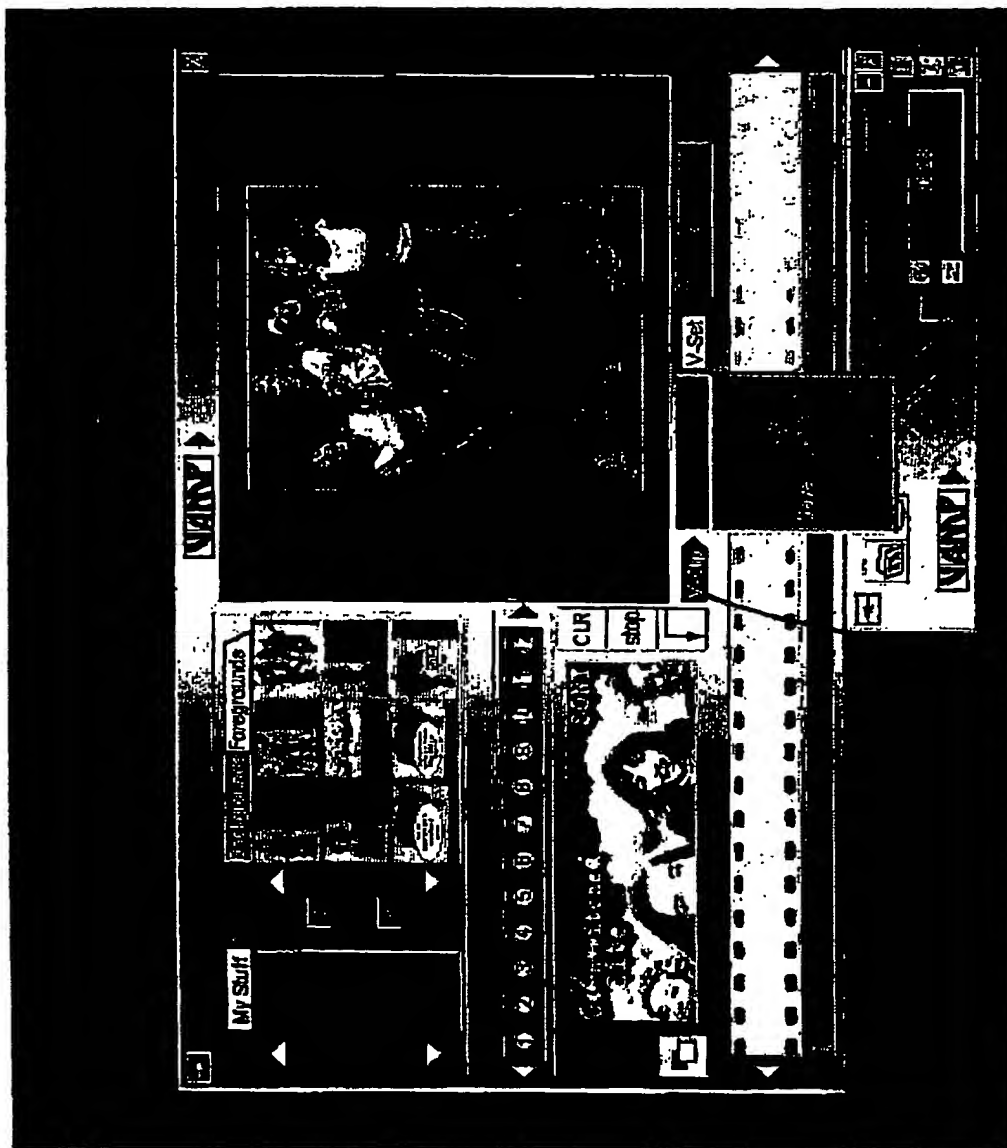


Fig. 17

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/20814

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 13/00

US CL : 354/328; 707/101, 102, 104

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 354/328; 707/101, 102, 103, 104

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

East: USPAT file

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,760,767 A (SHORE ET AL) 02 JUNE 1998, Col. 1, lines 39-59; col. 2, lines 55-60; col. 8, line 58 - col. 11, line 7; fig. 3.	1-21
Y	US 5,826,102 A (ESCOBAR ET AL) 20 OCTOBER 1998, col. 4, line 5 - col. 5, line 32; see explanation of figures 1,3-5.	1-21

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

07 NOVEMBER 2000

Date of mailing of the international search report

26 DEC 2000

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